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Think There's No Proof For Evolution? Have a Cigarette!

Many people who support the recent state board of education's decision to de-emphasize evolution justify their stance by claiming a lack of "hard, empirical evidence" in support of evolution.

Apparently, the only evidence these people will accept in support of evolution would be to make cells or new species from scratch "in a test tube." But to say that the only valid scientific conclusions are those that are founded on direct experiments is a fallacious, if popularly-held, idea.

Take smoking, for example. There is no direct, laboratory test that can prove that smoking causes cancer.

After all, how could investigators design a direct experiment to evaluate smoking's effect on lung cancer? They would have to give one group real cigarettes, another group fake cigarettes, and see which ones develop cancer. Ethical problems of giving known carcinogens to humans aside, the study would be a logistical nightmare. (What is a fake cigarette anyway?)

Nevertheless, epidemiologists have amassed an extremely large body of knowledge demonstrating the health risks of smoking. They have carried out cohort studies and observed that a large proportion of smokers develop lung cancer. They have carried out case-control studies where large proportions of people with lung cancer were found to have smoked. One population-based study tracked the incidence of smoking and lung cancer over time and found that the data of the latter mirrored that of the former but displaced 30 years behind.

With studies like these, even without a direct experiment, doctors can say unequivocally that smoking causes lung cancer.

The application to evolution theory is obvious. Critics of evolution are quick to point out that scientists cannot use direct experiments to prove evolution. Knowing that evolution supposedly happened over eons and calling for controlled duplication of speciation in the laboratory, these people have congratulated themselves, confident that scientists could never carry out such a direct experiment.

And, of course, we can't. But, if we put the same restrictions on what makes valid evidence, we also can't say that smoking causes lung cancer.

Anybody feel like lighting up?

Fact is, science uses many different types of studies besides direct experiments to establish evidence. No one has seen a quark, yet we can infer their existence by observing collisions between subatomic particles. Even without witnesses, people are often convicted of crimes based on inferential, after-the-fact evidence. Neither has anyone duplicated radical speciation in the lab. But whoever calls evolution invalid just because no such direct experiment has yet been performed in a laboratory should probably go smoke a cigarette.

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